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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,699	02/27/2004	Federico Uslenghi	60,246-341; 10,740	9287
26096 7590 12/12/2007 CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			EXAMINER JOYNER, KEVIN	
			ART UNIT 1797	PAPER NUMBER
			MAIL DATE 12/12/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/789,699	<b>Applicant(s)</b> USLENGHI ET AL.	
	<b>Examiner</b> Kevin C. Joyner	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 17-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## FINAL ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Group I, claims 1-16 in the reply filed on May 4, 2007 is acknowledged.
2. Claims 17-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on May 4, 2007.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Suenaga (Japanese Patent No. JP 2001299881 A).

Suenaga discloses an indoor air quality module comprising: a compartment (14) having an inlet and an outlet; a monolith (2) located between the inlet and the outlet; a photocatalytic coating on the monolith (paragraph 10); an ultraviolet light source (4) which directs ultraviolet light towards the photocatalytic coating; and a shield (3) positioned on an opposite side of the monolith (drawing 7, paragraphs 12-13) from the ultraviolet light source as shown in Figures 1-14 and disclosed in paragraphs 6-7.

Regarding claim 2, the reference discloses that the shield is capable of reflecting the ultraviolet light that passes through the monolith towards the monolith to minimize leakage of the ultraviolet light from the module (paragraph 13; Figure 7).

Regarding claim 7, Suenaga continues to disclose that the shield (3) has an upper edge and an opposing lower edge in drawings 4 and 7. More specifically, the shield (3) as shown in Drawing 4 is provided with edges. Said shield (3) is adhered to the compartment (14) as shown in Drawing 7, wherein the shield still comprises said edges.

Concerning claim 12, the height of the shield of Suenaga is perfectly capable of being related to a distance defined by the distance between the ultraviolet light source and the shield, and a non-reflection angle defined as a maximum angle from horizontal that the ultraviolet light can pass through the monolith without contacting the monolith. Regarding claim 13, the shield height is also perfectly capable of being determined by the equation:

$$H = 2 \cdot D \cdot \tan(\alpha)$$

Wherein the shield height is defined by the variable H, the distance is defined by the variable D, and the non-reflection angle is defined by the variable  $\alpha$ .

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 8-10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suenaga (Japanese Patent No. JP 2001299881 A).

Regarding claims 8 and 9, Suenaga discloses in an alternate embodiment that an upper gap is defined between the upper edge and the compartment and a lower gap is defined between the opposing lower edge and the compartment that produce gap heights that are substantially equal as shown in Drawing 9. The gaps are provided in order to allow the shield (3) to vibrate in order to maximize the irradiation process on the filter as disclosed in paragraph 15. More specifically, the shield has edges and produces very small gaps between itself and the upper and lower portions of the compartment (14). As broadly defined and shown in Drawing 9, the gaps are substantially equal in height. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the first embodiment of Suenaga to include an upper gap that is defined between the upper edge and the compartment and a lower gap that is defined between the opposing lower edge and the compartment to produce gap heights that are substantially equal in order to allow the shield (3) to vibrate and subsequently maximize the irradiation process as exemplified by the alternate embodiment of Suenaga.

Suenaga is relied upon as set forth in reference to claim 1 above. Suenaga does not appear to disclose that the device includes a first monolith and a second monolith, the ultraviolet light source located between the first monolith and the second monolith. However, it is conventionally known in the art of sterilization to utilize a first monolith and a second monolith wherein an ultraviolet light source is located between the first monolith and the second monolith in order to enhance the sterilization process.

Suenaga discloses this particular piece of evidence in drawing 19 of a conventional indoor air quality module. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus to include a first monolith and a second monolith wherein an ultraviolet light source is located between the first monolith and the second monolith, as such is conventionally well known and commonly used in order to enhance the sterilization process as exemplified by Suenaga.

7. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suenaga (Japanese Patent No. JP 2001299881 A) in view of Ichikawa (U.S. Patent No. 6,421,915).

Suenaga is relied upon as set forth above. Suenaga continues to disclose that the monolith is coated with a photocatalytic coating (paragraph 10), but does not appear to disclose that the monolith comprises a honeycomb shape with a plurality of hexagonal passages. Ichikawa discloses a monolith coated with a catalyst that is utilized in indoor air quality modules wherein the monolith comprises a honeycomb shape with a plurality of hexagonal passages in order to provide effective purifiability of air quality while decreasing the amount of pressure loss within the system (column 3,

lines 10-39). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the monolith of Suenaga to include a honeycomb shape with a plurality of hexagonal passages in order to provide effective purifiability of air quality while decreasing the amount of pressure loss within the system as exemplified by Ichikawa.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suenaga (Japanese Patent No. JP 2001299881 A) in view of Say et al. (U.S. Patent No. 5,790,934).

Suenaga is relied upon as set forth above. Suenaga does not appear to disclose that the photocatalytic coating is titanium dioxide. However, titanium dioxide is a commonly used and conventionally known material for photocatalytic coating in the art of purifying air. Say discloses an indoor air quality module comprising: a compartment having an inlet and an outlet; a monolith located between the inlet and the outlet; a photocatalytic coating on the monolith; and an ultraviolet light source which directs ultraviolet light towards the photocatalytic coating (Figures 1-9; column 2, lines 35-47). The reference continues to disclose that the photocatalytic coating is titanium dioxide (column 5, lines 52-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Suenaga to utilize titanium dioxide as the photocatalytic coating, as such is commonly used and a conventionally known material for photocatalytic coating in the art of purifying air as exemplified by Say.

9. Claims 6, 11-13 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suenaga (Japanese Patent No. JP 2001299881 A) in view of Bigelow (U.S. Patent No. 6,500,387).

Suenaga is relied upon as set forth above. Suenaga does not appear to disclose that the shield comprises a sheet metal and that the shield height is less than the monolith height. Bigelow discloses an indoor air quality module comprising: a compartment having an inlet and an outlet; a monolith (20 & 22) located between the inlet and the outlet; a photocatalytic coating on the monolith (column 12, lines 1-10); an ultraviolet light source (50) which directs ultraviolet light towards the photocatalytic coating; and a shield (26) adjacent the monolith as shown in Figures 2 & 2A. The reference continues to disclose that the shield comprises a sheet metal (column 12, lines 10-16) and that the shield height is less than the monolith height (as shown in Figures 9 & 9A) in order to provide optimal reflectivity (column 11, lines 32-40) and limit the amount of air that is blocked by the shield when passing through the module (For further explanation, please see the **Response to Arguments** section of this action). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the shield of Suenaga to utilize a sheet metal material and provide a shield height that is less than the monolith height in order to provide optimal reflectivity and limit the amount of air that is blocked by the shields when passing through the module as exemplified by Bigelow. Concerning claims 12, the reference of Bigelow as well as Suenaga in view of Bigelow is perfectly capable of being related to a distance defined by the distance between the ultraviolet light source and the shield, and a non-



reflection angle defined as a maximum angle from horizontal that the ultraviolet light can pass through the monolith without contacting the monolith. Regarding claim 13, the shield height of Bigelow as well as Suenaga in view of Bigelow is also perfectly capable of being determined by the equation:

$$H = 2 * D * \tan (\alpha)$$

Wherein the shield height is defined by the variable H, the distance is defined by the variable D, and the non-reflection angle is defined by the variable  $\alpha$ .

Regarding claim 14, Suenaga discloses an indoor air quality module comprising: a compartment (26) having an inlet and an outlet; a first monolith (2) located between the inlet and the outlet of the compartment and having a monolith height; a second monolith (2) located between the inlet and the outlet of the compartment and having the monolith height; a photocatalytic coating on the first monolith and the second monolith (paragraph 10); an ultraviolet light source (4) adjacent the first monolith and the second monolith which is capable of directing ultraviolet light towards the photocatalytic coating; and a first shield (3); and a second shield having a shield height (3), the first monolith and the second monolith located between the first shield and the second shield, and the first shield being capable of reflecting the ultraviolet light that passes through the first monolith towards the first monolith to minimize leakage of the ultraviolet light from the module and the second shield reflecting the ultraviolet light that passes through the

second monolith towards the second monolith to minimize leakage of the ultraviolet light from the module as shown in Figure 14 and disclosed in paragraph 20. It is noted that many of the limitations of claim 14 are met with respect to claim 1, thus the explanations given with claim 1 are relied upon as necessary with respect to claim 14. Suenaga does not appear to disclose that the shield height is less than the monolith height. Bigelow discloses an indoor air quality module comprising: a compartment having an inlet and an outlet; a monolith (20 & 22) located between the inlet and the outlet; a photocatalytic coating on the monolith (column 12, lines 1-10); an ultraviolet light source (50) which directs ultraviolet light towards the photocatalytic coating; and a shield (26) adjacent the monolith as shown in Figures 2 & 2A. The reference continues to disclose that the shield height is less than the monolith height (as shown in Figures 9 & 9A) in order to limit the amount of air that is blocked by the shields when passing through the module and allow for optimal reflectivity (column 11, lines 32-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Suenaga to prepare the shield with a height that is less than the monolith height in order to limit the amount of air that is blocked by the shields when passing through the module and provide optimal reflectivity as exemplified by Bigelow (For further explanation, please see the **Response to Arguments** section of this action).

Concerning claim 15, Suenaga in view of Bigelow is relied upon as set forth in reference to claim 14. Suenaga continues to disclose in an alternate embodiment that the shield (3) has an upper edge and an opposing lower edge, wherein an upper gap is defined between the upper edge and the compartment and a lower gap is defined

between the opposing lower edge and the compartment to produce two gap heights that are substantially equal (Drawing 9) in order to allow the shield to vibrate and disperse the reflected light to the monolith from various different angles (paragraphs 15 and 16). More specifically, the shield has edges and produces very small gaps between itself and the upper and lower portions of the compartment (14). As broadly defined and shown in Drawing 9, the gaps are substantially equal in height. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the first embodiment of Suenaga in view of Bigelow to include a shield having an upper edge and an opposing lower edge, wherein an upper gap is defined between the upper edge and the compartment and a lower gap is defined between the opposing lower edge and the compartment to produce two gap heights that are substantially equal in order to allow the shield to vibrate and disperse the reflected light to the monolith from various angles as exemplified by the second embodiment of Suenaga.

Regarding claim 16, the shield heights of Suenaga are fully capable of being defined by a first distance that is defined between the ultraviolet light source and the first shield and a second distance that is defined between the ultraviolet light source and the second shield, and a non-reflection angle that is defined as a maximum angle from horizontal that the ultraviolet light can pass through the first monolith and the second monolith without contacting the first monolith and the second monolith, and wherein the shield height of the first shield depends on the first distance and the non-reflection angle and the shield height of the second shield depends on the second distance and the non-reflection angle.

### ***Double Patenting***

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1-5 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, and 8-12 of copending Application No. 10/788845 in view of Suenaga (Japanese Patent No. 2001299881A). Claims 1-3 and 8-12 of Application No. 10/788845 disclose all of the limitations of claims 1-5 from the instant application except for the shield positioned on an opposite side of the monolith from the ultraviolet light source. However, as discussed above, Suenaga discloses a shield positioned on an opposite side of the monolith from the ultraviolet light source in an indoor air quality module. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify '845 to include a

shield positioned on an opposite side of the monolith from the ultraviolet light source in order to reflect the unused ultraviolet light towards the monolith as exemplified by Suenaga.

This is a provisional obviousness-type double patenting rejection.

12. Claims 1-5 and 10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, and 10-12 of copending Application No. 10/789962 in view of Suenaga (Japanese Patent No. 2001299881A). Claims 1-3 and 10-12 of Application No. 10/789962 disclose all of the limitations of claims 1-5 and 10 from the instant application except for the shield positioned on an opposite side of the monolith from the ultraviolet light source. However, as discussed above, Suenaga discloses a shield positioned on an opposite side of the monolith from the ultraviolet light source in an indoor air quality module. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify '962 to include a shield positioned on an opposite side of the monolith from the ultraviolet light source in order to reflect the unused ultraviolet light towards the monolith as exemplified by Suenaga.

This is a provisional obviousness-type double patenting rejection.

### ***Response to Arguments***

13. Applicant's arguments with respect to claims 1, 8, 12 and 13 have been considered but are moot in view of the new ground(s) of rejection.

14. Applicant's arguments with respect to claim 14 filed September 28, 2007 have been fully considered but they are not persuasive.

*Applicant's principle argument is:*

*(a) A prima facie case of obviousness has not been established. In this case, there is no benefit to modifying the mirror (3) of Suenaga to have a height that is less than the monolith height because the mirrors 3 are positioned at the outer periphery of the duct 14 and not within the open space of the duct 14.*

The Examiner acknowledges that the wrong drawing (drawing 3) was relied upon, however as clearly described by the Examiner with respect to the drawing it was obvious that the Examiner was describing drawing 9. As clearly shown in Drawing 9, airflow is distributed on the outside of the mirror 3. This airflow is substantially blocked by the mirror to reach the filter. One of ordinary skill would recognize this problem and therefore conclude that the mirror must be made smaller in order to allow said airflow to sufficiently reach the filter. One of ordinary skill would also recognize that the ultraviolet rays that deflect off the shield (3) are deflected off the portion of the shield that is slightly smaller in size than the monolith height. Thus, in an effort to save materials and reduce cost, one would utilize a smaller shield (3) that would provide optimal reflectivity, reduce the amount of air blocked by said shield, and reduce cost for the apparatus. As such, Bigelow provides a teaching that a mirror that is smaller than a filter is sufficient to redirect the ultraviolet rays towards the filter to subsequently decontaminate said filter.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin C. Joyner whose telephone number is (571) 272-2709. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on (571) 272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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KCJ



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SUPERVISORY PATENT EXAMINER